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10/823,191	04/13/2004	William R. Trutna JR.	10031219-1	4042

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AGILENT TECHNOLOGIES, INC.

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EXAMINER

KIANNI, KAVEH C

ART UNIT

PAPER NUMBER

2883

DATE MAILED: 06/13/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/823,191

Applicant(s)

TRUTNA ET AL.

Examiner

Kianni C. Kaveh

Art Unit

2883

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 03 April 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) 21-23 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1, 2, 4, 6, 7, 9, 10, 13, 14 and 16-20 is/are rejected.
- 7) ☒ Claim(s) 3,5,8,11,12 and 15 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 5.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

### **DETAILED ACTION**

Applicant's election without traverse of claims 1-20 in a paper submitted on 4/3/06 is acknowledged. The requirement is still deemed proper and is therefore made FINAL

#### ***Allowable Subject Matter***

Claims 3, 5, 8, 11 12 and 15 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 3, 5, 8, 11 12 and 15 allowable because the prior art of record, taken alone or in combination, fails to disclose or render obvious because the prior art does not teach imitations of the these claims in combination with the rest of the limitations of the base claim.

### **Claim Rejections - 35 USC § 103**

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary.

Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of

each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1, 17-18 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Thomson et al. (Thomson) (US 6031852).

Regarding claim 1, Thomson teaches a wavelength tunable light source (shown in fig. 1, abstract), comprising:

- a resonant light path supporting oscillation of light in at least one longitudinal mode (shown in at least fig. 1, item 28);
- an optical gain medium 26 disposed in the resonant light path 28;
- an optical grating 16 have a grating surface arranged to receive incident light along the light path at an incidence angle relative to the grating surface and to diffract light along the light path 28 at a diffraction angle relative to the grating surface different from the incidence angle (see fig. 1, item reflected light off grating 16 and col. 6, lines 19-25);
- a first acousto-optic deflector 10 arranged to intercept light along the light path, and operable to deflect the intercepted light and to induce a first Doppler shift of longitudinal mode frequencies (see fig. 1, items 10,12 and col. 6, specifically lines 1-13 and 19-22);
- and a second acousto-optic deflector 12 arranged to intercept light along the light path, and operable to deflect the intercepted light and to induce a second Doppler shift of longitudinal mode frequencies, wherein the first and second Doppler shifts are in

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opposite directions (see fig. 1, items 10,12 and col. 6, specifically lines 1-13 and 19-22).

However, Thomson does not explicitly state that the above mode frequency shift is Doppler shift. Nevertheless, Thomson states that operating transducers including acoustic waves that are in opposite directions (shown in fig.. 1 and see col. 6). Thus, it is obvious/well-known to those of ordinary skill in the art when the invention was made that generated shifted frequency waves generated by transducers through acousto-optic elements having optical effect that are/known as Doppler shift since such configuration would rapidly tune output laser wavelengths (see col. 1, 1<sup>st</sup> and 2<sup>nd</sup> parag.).

Regarding claim 17-18 and 20, Thomson further teaches wherein the optically resonant light path is defined between retroreflectors a first mirror HR1 and a second mirror HR2; a driver connected to the first and second acousto-optic deflectors and operable to drive the first acousto-optic deflector with a first signal having a first time-varying frequency profile and to drive the second acousto-optic deflector with a second signal having a second time-varying frequency profile substantially corresponding to a time-shifted version of the first time-varying frequency profile (see at least item RF generator 24 and at least col. 6, 1<sup>st</sup> parag.; wherein different frequencies correspond to frequency profile).

Claims 2, 4, 6, 7, 9, 10, 13, 14, 16, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Thomson et al. and in further view of Paoli et al. (US 3696310).

Regarding claims 2, 4, 6, 7, 9, 10, 14, 16, and 19, Thomson teaches at least one additional optical dispersive/diffracting/reflecting element such as 40 42 and 48 have a reflecting/diffracting surface arranged to receive incident light along the light path at a second incidence angle relative to the diffractive surface and to diffract light along the light path at a second diffraction angle relative to the grating surface different from the second incidence angle (shown in at least fig. 4, item diffractive elements 40 and 42; wherein item reflectors can also be gratings) and wherein the first grating and the first acousto-optic deflector are arranged in a first segment of the light path and the second diffractive element and the second acousto-optic deflector are arranged in a second segment of the light path (shown in at least fig. 4); wherein the optically resonant light path is defined between a first mirror HR1 and a second mirror HR2; wherein the gain medium, the first dispersive 40, the first acousto-optic deflector 10, the second acousto-optic deflector 12, and the second dispersive elements 42 are arranged in order along the light path from the first mirror HR1 to the second mirror HR2. However, Thomson does not utilize gratings as dispersive elements and an optical isolator disposed in the circulating light path. Nevertheless, Thomson states that the acousto-optic deflectors are essentially gratings (see col. 6, 2<sup>nd</sup> parag.). These limitations are more specifically are used/taught by Paoli et al.. Paoli teaches acousto-optic elements that includes the above limitations (as shown in

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fig. 5) and uses optical gratings as means of diffractive elements (see at least fig. 2, items 12 and 14). Thus, Paoli provides means for synchronization and/or tuning of laser output efficiently (see col. 2, summary). Furthermore, using an optical isolator is extremely conventional in the art in order to reduce optical noise/back-reflection, and thus, it would have been obvious to a person of ordinary skill in the art when the invention was made to substitute one or more dispersive element(s) of Thomson with that of grating(s) of Paoli, along with use of convention isolator, in order to produce a wavelength tunable light source that includes the above limitations since such light source would rapidly tune output laser wavelengths (see col. 1, 1<sup>st</sup> and 2<sup>nd</sup> parag.).

Regarding claims 13-14, as stated in rejection of claim 2, above, Thomson further teaches wherein the light path is a circulating light path (shown in at least fig. 4, item light is circulating in path from and to HR1); wherein the gain medium, the first grating, the first acousto-optic deflector, the second acousto-optic deflector, and the second dispersive/deflector are arranged in order along the circulating light path (shown in fig. 4; regarding second reflector the arguments presented in rejection of claim 2, is analogous in rejection of claim 14);

### ***Citation of Relevant Prior Art***

Prior art made of record and not relied upon is considered pertinent to applicant's disclosure. In accordance with MPEP 707.05 the following references are pertinent in rejection of this application since they provide substantially the same information disclosure as this patent does. These references are:

US 4702600 A Handrich; Eberhard et al. teaches using an optical isolator

US 20030219094 A1 Basting, Dirk L. et al.

US 6151427 A Satorius; Duane A.

US 5128798 A Bowen; Donald F. et al.

US 4588296 A Cahill; Richard F. et al.

US 3774121 A Ashkin; Arthur et al.

These references are cited herein to show the relevance of the apparatus/methods taught within these references as prior art.

***Contact Information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to K. Cyrus Kianni whose telephone number is (571) 272-2417.

The examiner can normally be reached on Monday through Friday from 8:30 a.m. to 6:00 p.m. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank Font, can be reached at (571) 272-2415.

**Any response to this action should be mailed to:**

Commissioner of Patents and Trademarks  
Washington, D.C. 20231

**or faxed to:**

(703) 872-9306 (for formal communications intended for entry)

**or:**

Hand delivered responses should be brought to Crystal Plaza 4, 2021 South Clark Place, Arlington, VA., Fourth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application should be directed to the Group Receptionist whose telephone number is (703) 308-0956.

6/6/06

  
**KAVEH KIANNI  
PRIMARY EXAMINER**